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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/138,429	08/24/1998	IMRAN HASHIM	AMAT/2406/MD	4066
32588	7590	03/29/2004	EXAMINER	
APPLIED MATERIALS, INC. 2881 SCOTT BLVD. M/S 2061 SANTA CLARA, CA 95050			MERCADO, JULIAN A	
			ART UNIT	PAPER NUMBER
			1745	

DATE MAILED: 03/29/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/138,429

Applicant(s)

HASHIM ET AL.

Examiner

Julian Mercado

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 April 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 21-45 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) 31 is/are allowed.
- 6) ☐ Claim(s) 21-30 and 32-45 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Remarks

This Office action is responsive to applicant's amendment filed April 9, 2003.

Claim Objections

The objection to claim 27 for minor informalities has been withdrawn.

As a matter of record, applicant is correct that duplicate recitations of claim 27 were not present in the January 23, 2003 preliminary amendment. However, duplicate recitations of claim 27 were indeed presented in the November 27, 2002 amendment. Since the January 23, 2003 preliminary amendment replaced the claims presented in the November 27, 2002 amendment, the objection to claim 27 has been obviated.

The prior Office action mailed on January 22, 2003 crossed in transmission with applicant's January 23, 2003 preliminary amendment. This Office presents a new ground of rejection(s) and is therefore made NON-FINAL.

Claim Rejections - 35 USC § 112

The rejection of claim 31 under 35 U.S.C. 112, second paragraph has been obviated by applicant's amendment.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

New Rejection: the following ground of rejection(s) replaces the prior rejection(s) under 35 U.S.C. 103(a) set forth in the January 22, 2003 Office action.

Claims 21, 22, 24, 27-29, 32-43 and 45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hsu (U.S. Pat. 5,589,039) et al. in view of Miyata (U.S. Pat. 5,519,373) and Tepman (U.S. Pat. 5,527,438).

The teachings of Hsu have been discussed in a prior Office action, in that the domains of a magnetic sputtered target [21] are aligned during deposition with application of a substantially parallel magnetic field. (col. 1 line 43-52, col. 5 line 49-53).

Hsu does not explicitly teach a stationary magnetic array surrounding an outer periphery of the substrate support surface. However, Miyata teaches a stationary magnetic field using a stationary magnet array which results in a substantially parallel magnetic field about the target surface. (Figure 5, col. 5 line 1-12) The examiner additionally notes that Miyata's invention is specifically disclosed for a magnetron sputtering apparatus. (col. 1 line 7-13) Thus, at the time the invention was made, it would have been obvious to one of ordinary skill in the art to modify Hsu's invention by providing a substantially parallel magnetic field at the surface of the substrate during sputtering. The motivation for such a modification would be to enhance sputtering efficiency and allow for more economical use of costly target material (see Miyata, col. 1 line

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36-52) along with employing a substantially parallel magnetic field as specifically called for by Hsu.

Hsu does not explicitly teach the sputtering chamber to have a target and a grounded collimator. However, Tepman is relied upon to teach these components of a sputtering chamber such as found in grounded collimator [12] and target [14]. (Figure 1) Thus, the skilled artisan would find obvious to employ in Hsu's invention a grounded collimator, for reasons such as screening highly oblique sputtered particles and providing for a symmetrical flux of incoming target material.

Claims 23, 25, 26, 30 and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hsu, Miyata and Tepman as applied to claims 21, 22, 24, 27-29, 32-43 and 45 above, and further in view of Boys et al. (U.S. Pat. 4,500,409).

Regarding claims 23 and 26, while Hsu does not explicitly teach a long throw distance of at least 50 mm, Boys teaches a long throw distance equal to 2.5 in or 63 mm. (col. 12 line 37) Thus, it would have been obvious to one of ordinary skill in the art to further modify Hsu's invention by employing a long throw distance of at least 50 mm, for reasons such as enhancing the deposition rate and uniformity.

Regarding claims 25, 30 and 44, while Hsu does not explicitly teach a Ni/Fe alloy for the target, Boys teaches a commercially known Permalloy Ni/Fe alloy. (col. 12 line 23) Thus, it would have also been obvious to use Ni/Fe as the target material as this material is well-known and its use would have been motivated for reasons such as commercial availability and well-known performance for a magnetic film material.

Allowable Subject Matter

Claim 31 is allowed for the reasons set forth in the prior Office action. The examiner acknowledges applicant's revision of dependent claim 31 in including all the limitations of base claim 27.

Conclusion

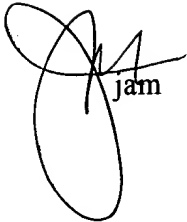
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Julian Mercado whose telephone number is (571) 272-1289. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick J. Ryan, can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.


Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.



jam



Patrick Ryan
Supervisory Patent Examiner
Technology Center 1700